



Docket No: 031673-002000

IFW

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

*In re* Patent Application of )  
**Sak-Wah TAM-CHANG *et al.*** )  
Application No.: 10/578,248 ) Art Unit: 1634  
Filed: May 4, 2006 ) Confirmation No.: 3055  
For: **IMPROVED METHODS FOR** ) Examiner: Unassigned  
**DETECTING AND MEASURING** )  
**SPECIFIC NUCLEIC ACID SEQUENCES** )

INFORMATION DISCLOSURE STATEMENT

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Sir:

In accordance with the duty of disclosure as set forth in 37 C.F.R. §1.56, the accompanying information is being submitted in accordance with 37 C.F.R. §§1.97 and 1.98.


Pursuant to 37 C.F.R. §1.98, copies of each of the cited non-patent documents are appended. However, copies of the listed U.S. patents are not enclosed since it is no longer required, according to the July 11, 2003 waiver of the requirement for copies of cited U.S. patents and U.S. patent application publications in national patent applications filed after June 30, 2003 and international applications entering the national stage under 35 U.S.C. §371 after June 30, 2003.

These cited documents are being submitted within three (3) months of the filing or entry of the national stage of this application or before the first Office Action on the merits, whichever is later. Since these documents are being filed within the time period set forth in 37 C.F.R. 1.97(b), no fee or statement is required.

It is requested that the accompanying PTO-1449 be considered and made of record in the above-identified application. To assist the Examiner, the documents are listed on the attached form PTO-1449. It is respectfully requested that an Examiner-initialed copy of this form be returned to the undersigned.

The Commissioner is hereby authorized to charge any fees in connection with this filing, which may be required, or credit any overpayment to Deposit Account No. 19-2380.

Respectfully submitted,

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Date: September 27, 2006



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				Application Number	10/578,248
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				First Named Inventor	Suk-Wah TAM-CHANG <i>et al.</i>
				Art Unit	1634
				Examiner Name	Unassigned
Sheet	1	of	3	Attorney Docket Number	031673-002000

U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. <sup>1</sup>	U.S. Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number - Kind Code <sup>2</sup> (if known)			
		U.S. – 5,744,305	04-28-1998	FODOR, <i>et al.</i>	
		U.S. – 5,723,591	03-03-1998	LIVAK, <i>et al.</i>	
		U.S. – 6,117,986	09-12-2000	NARDONE, <i>et al.</i>	
		U.S. – 6,258,569	07-10-2001	LIVAK, <i>et al.</i>	
		U.S. – 6,451,530	09-17-2002	HAWKINS, <i>et al.</i>	

OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
		BEIER, M. and HOHEISEL, J. D., Versatile derivatisation of solid support media for covalent bonding on DNA-microchips, <i>Nucl. Acids Res.</i> , 27(9):1970-1977, 1999	
		NIEMEYER, C and BLOHM, D., DNA Microarrays, <i>Angew Chem. Int. Ed. Engl.</i> 38(19):2865-2869, 1999	
		ROGERS, Y.H. <i>et al.</i> , Immobilization of oligonucleotides onto a glass support via disulfide bonds: A method for preparation of DNA microarrays, <i>Anal. Biochem.</i> , 266(1):23-30, 1999	
		ZAMMATTEO, N. <i>et al.</i> , Comparison between different strategies of covalent attachment of DNA to glass surfaces to build DNA microarrays, <i>Anal. Biochem.</i> , 280(1):143-150, 2000	
		PIRRUNG, M. C. <i>et al.</i> , How to make a DNA chip, <i>Angew Chem. Int. Ed. Engl.</i> , 41(8):1276-1289, 2002	
		CHARLES, P. T. <i>et al.</i> , Fabrication and surface characterization of DNA microarrays using amine- and thiol-terminated oligonucleotide probes, <i>Langmuir</i> , 19(5):1586–1591, 2003	
		SCHENA, M. <i>et al.</i> , Quantitative monitoring of gene expression patterns with a complementary DNA microarray, <i>Science</i> , 270(5235):467-470, 1995	
		SEIDEL, C. A. M. <i>et al.</i> , Nucleobase-specific quenching of fluorescent dyes. 1. nucleobase one-electron redox potentials and their correlation with static and dynamic quenching efficiencies, <i>J. Phys. Chem.</i> , 100(13):5541-5553, 1996	
		LEWIS, F. D. and WU, Y., Dynamics of superexchange photoinduced electron transfer in duplex DNA, <i>J. Photochem. Photobiol. C: Photochem. Rev.</i> , 2(1):1-16, 2001	

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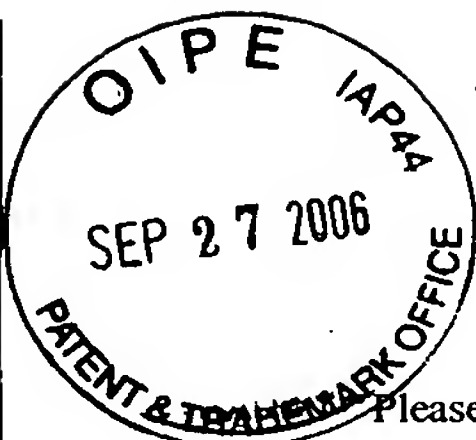
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		LEWIS, F. D. <i>et al.</i> , Dynamics of photoinduced charge transfer and hole transport in synthetic DNA hairpins, <i>Acc. Chem. Res.</i> , 34(2):159-170, 2001	
		DE SILVA, A. P. <i>et al.</i> , The development of molecular fluorescent switches, <i>Trends Biotechnol.</i> , 19(1):29-34, 2001	
		TORIMURA, <i>et al.</i> , Fluorescence-quenching phenomenon by photoinduced electron transfer between a fluorescent dye and a nucleotide base, <i>Anal. Sci.</i> , 17(1):155-160, 2001	
		THOMAS, G. K. <i>et al.</i> , Photochemistry of chromophore-functionalized gold nanoparticles, <i>Pure Appl. Chem.</i> 74(9):1731-1738, 2002	
		VULLEV, V. I. <i>et al.</i> , Photoinduced charge transfer in helical polypeptides, <i>Res. Chem. Intermed.</i> , 28(7-9):795-815(21), 2002	
		YAMANE, A., MagiProbe: a novel fluorescence quenching-based oligonucleotide probe carrying a fluorophore and an intercalator, <i>Nucl. Acids Res.</i> , 30(19):e97, 2002	
		DU, H. <i>et al.</i> , Hybridization-Based Unquenching of DNA Hairpins on Au Surfaces: Prototypical "Molecular Beacon" Biosensors, <i>J. Am. Chem. Soc.</i> , 125(14):4012 -4013, 2003	
		KAWAI, K. and MAJIMA, T., Effect of hydrogen bonding on the photo-oxidation of DNA, <i>J. Photochem. Photobiol. C: Photochem. Rev.</i> , 3(1):53-66, 2002	
		MAY, J. P. <i>et al.</i> , A new dark quencher for use in genetic analysis, <i>Chem. Commun. (Camb.)</i> : (8):970-971, 2003	
		MORRISON, L. E. <i>et al.</i> , Solution-phase detection of polynucleotides using interacting fluorescent labels and competitive hybridization, <i>Anal Biochem.</i> , 183(2):231-244, 1989	
		KURATA, S. <i>et al.</i> , Fluorescent quenching-based quantitative detection of specific DNA/RNA using a BODIPY <sup>®</sup> FL-labeled probe or primer, <i>Nucl. Acids Res.</i> , 29:e34, 2001	
		BROUDE, N. E. <i>et al.</i> , DNA microarrays with stem-loop DNA probes: preparation and applications, <i>Nucl. Acids Res.</i> , 29:e92, 2001	
		ZAHAVY, E. and FOX, M. A., Photophysical quenching mediated by guanine groups in pyrenyl- <i>n</i> -alkylbutanoamide end-labeled oligonucleotides, <i>J. Phys. Chem. B.</i> , 103(43); 9321-9327, 1999	
		CROCKETT, A. O. and WITTWER, C. T., Fluorescein-labeled oligonucleotides for real-time PCR: using the inherent quenching of deoxyguanosine nucleotides, <i>Anal. Biochem.</i> , 290(1):89-97, 2001	
		WALTER, N. G. and BURKE, J. M., Real-time monitoring of hairpin ribozyme kinetics through base-specific quenching of fluorescein-labeled substrates, <i>RNA</i> , 3(4):392-404, 1997	

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		DNA Microarrays: A Practical Approach. MARK SCHENA ( <i>ed.</i> ), Oxford, Oxford University Press, 1999	
		Microarray Biochip Technology. MARK SCHENA, ( <i>ed.</i> ), Natick, MA, Eaton Publishing, 2000	
		SCHENA, M. (2003). Microarray Analysis. Wiley-Liss, Hoboken, NJ	
		TIJSEN, P., Hybridization with Nucleic Acid Probes, Laboratory Techniques in Biochemistry and Molecular Biology series, Volume 24, Elsevier, Amsterdam, 1993. Parts 1 & 2	
		TIJSEN, P., Hybridization with Nucleic Acid Probes, Laboratory Techniques in Biochemistry and Molecular Biology series, Volume 24, Elsevier, Amsterdam, 1993, Part 1, Overview of principles of hybridization and the strategy of nucleic acid probe assays	

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